

THE LOCUSTIDÆ AND GRYLLIDÆ (KATYDIDS AND CRICKETS) COLLECTED BY W. T. FOSTER IN PARAGUAY.

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The Locustidæ contained in the Foster collection number 176 specimens, representing 28 species, while the Gryllidæ comprise 69 specimens, representing 11 species. The following paper treats of these two families. The nonsaltatorial forms have previously been reported upon,<sup>a</sup> and the Acrididæ will soon be discussed in the pages of these Proceedings by Professor Bruner.

Family LOCUSTIDÆ.

Subfamily PHANEROPTERINÆ.

1. ISOPHYA HAMATA Giglio-Tos.

Fourteen males, sixteen females, three nymphs. January, February, March, August, and November.

These specimens agree almost perfectly with the description.

2. ANIARA PROXIMA Brunner.

Seven males, three females. February and October.

The males are somewhat larger than the measurements given by Brunner. The anterior tibiæ bear two or three distinct spines on the upper outer carina, thus differing from the generic diagnosis, but the radial veins are connate and the transverse veins are parallel, thus referring the species to the genus *Aniara*. The cerci of the male are simple, not furnished with a median process, as in the species of the genus *Hyperophora*, but are long and slender. While these insects possess several characters at variance with those described for *A. proxima*, they are nevertheless questionably referred to that species. They may eventually prove to be quite distinct, generically as well as specifically, but I have not thought it best to so consider them at this time.

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<sup>a</sup>Journ. N. Y. Ent. Soc., XII (1904), pp. 179-188.

3. *HYPEROPHORA BRASILIENSIS* Brunner.

Three males, three females. January to March.

The ovipositors of these females are longer than described by Brunner, one being 12 mm. long and nearly straight.

4. *HYPEROPHORA MINOR* Brunner.

Eleven males, six females. January, February, March, May, October, and November.

The females have the following measurements:

Length, pronotum, 3.75 mm.; elytra, 25-27 mm.; hind femora, 21-22 mm.; ovipositor, 7-8 mm.

5. *HYPEROPHORA PERUVIANA* Brunner.

Three males, five females, and one female nymph. August to March.

The females have the following measurements:

Length, pronotum, 4-4.5 mm.; elytra, 29-31 mm.; posterior femora, 23-25 mm.; ovipositor, 5 mm.

6. *AMAURA OLIVACEA* Brunner.

Three females. February and March.

The anterior tibia really has a terminal spine and sometimes also a basal one, but they are seemingly very readily broken off, being absent in most specimens. The posterior femora of these specimens measure 18 mm. in length and the elytra 23-25 mm. by 3-4 mm. broad at the middle.

7. *HOMATOICHA FUSCOPUNCTATA*, new species.

Seemingly allied to *Ceraia punctata* but can not be placed in *Ceraia* because of the armature of the posterior femora, as described below.

Color, green with the elytra marked along the median area with a row of seven or eight small fuscous spots. Lateral lobes of the pronotum higher than long, the posterior-ventral margin nearly straight. Posterior femora long and nearly unarmed beneath, the single specimen before me having a single spine on the inner carina just before the middle on the right leg, while the left femora is wholly unarmed. Ovipositor strongly curved upwards, apically rounded and finely serrate, the serrations extending back well toward the base above.

Length, pronotum, 5.5 mm.; elytra, 31 mm.; posterior femora, 26 mm.; ovipositor, 5 mm.

*Type*.—A single female, without date, in the collection of Professor Brunner.

8. *CERAIA SIMILIS*, new species.

Near *C. dentata* Brunner and falls next to it in the table of species. The cerci of the male are about four times as long as the basal width, apically depressed and armed with a sharp incurved black tooth and furnished on the inner side beyond the middle with a thick projection; subgenital plate of male elongate, tapering, apically cleft and furnished with styles as long as the middle width of the plate; subgenital plate of female considerably produced, tapering, the narrow tip subtruncate, very slightly notched; ovipositor strongly upcurved, the tip rounded, finely serrate near the apex below and above for the greater part of its length.

Length, pronotum, male and female 5-5.5 mm.; elytra, male 30-31 mm., female 30-32 mm.; posterior femora, male 21 mm., female 22 mm.; ovipositor, 7 mm.

*Type*.—Cat. No. 9626, U.S.N.M.

Five males, seven females. February, March, and April.

9. *CERAIA CORNUTOIDES*, new species.

Allied to *C. cornuta* Brunner and falls next to it in the table of species. The lobes of the anal segment of the male, however, are but one-sixth as long as the pronotum instead of being longer, as described in *cornuta*. The tarsi are scarcely infuscated and the cerci of the male are blunt and apically forked, each fork apically pointed. The ovipositor is long and apically rounded. The antennae are basally annulated with black, and the subgenital plate of the male is as described in *cornuta*. One female has the antennae unicolorous, the black bands being obliterated. It may represent another species.

Length, pronotum, male and female 6 mm.; elytra, male 34 mm., female 38-39 mm.; posterior femora, male 27 mm., female 27-30 mm.; ovipositor, 11 mm.

*Type*.—Cat. No. 9627, U.S.N.M.

One male, three females. December, January, and February.

10. *SCAPHURA VIGORSII* Kirby.

One female. January.

This is probably the same species as that mentioned by Giglio-Tos from Paraguay but is a little larger than the measurements given by Brunner. The anterior tibiae are armed above with three spines and the middle ones with several on both margins. Thus it is an aberrant member of this genus as defined by Brunner.

## 11. PHYLLOPTERA ALLIEDEA, new species.

Green, in dried specimens the head and pronotum usually somewhat yellowish. Pronotum flat above, the disk not much broader posteriorly than anteriorly; lateral carinae sharp; lateral lobes vertical, higher than long, broadly rounded below; meso- and metasternal lobes triangular. Elytra without markings, except two or three small obscure spots on the ulnar vein, and about 5 mm. shorter than the wings. Legs green or yellowish green; anterior tibiae sulcate above but unarmed; femora sparsely spinose below, the posterior ones armed on both margins in the apical half; spines of the anterior and intermediate femora usually very small and inconspicuous, generally confined to one carina. Cerci of the male curved inward and upward, the tip truncate and subdentate; subgenital plate of the male of moderate length, apically truncate, ventrally bisulcate, furnished with styles as long as the apical width of the plate. Ovipositor one and one-half times as long as the pronotum, apically pointed, serrate above on the apical half.

Length, pronotum, male and female, 5 mm.; elytra, male 33-34 mm.; female 35 mm.; posterior femora, male 19-21 mm.; female 22 mm.; ovipositor, 8 mm.; width of elytra at the middle, male 12.5-13 mm., female 14 mm.

*Type*.—Cat. No. 9628, U.S.N.M.

Six males, one female. February.

This species is allied to *P. fignoti* of Griffin and also somewhat allied to some of the species described by Giglio-Tos, but seems distinct from any of them. It probably resembles *P. phyllopteroides* Burmeister more closely than any other species, but is separable from that insect, as characterized by Brunner, by several characters.

## 12. PHYLLOPTERA FOSTERI, new species.

*Female*.—Uniformly brownish testaceous with the elytra marked along the middle with three small fuscous spots. Anterior tibiae unarmed above and smooth; anterior and intermediate femora unarmed or the anterior ones with a few very short inconspicuous spines on the anterior side. Lateral lobes of the pronotum higher than long, the anterior margin slightly sinuate; lateral carinae sharp. Elytra but a little more than one and one-half times as long as the posterior femora, but not so short as in *breccifolia*.

Length, pronotum, 5 mm.; elytra, 34 mm.; posterior femora, 22 mm.; ovipositor, 7 mm.; width of the elytra at the middle point, 13.5 mm.

*Type*.—One female, without date, in the collection of Professor Bruner.

This species is seemingly allied to *breccifolia* Brunner and *oralifolia* Burmeister and in a table of species would fall between those species.

## 13. PHYLLOPTERA SPINULOSA Brunner.

Three males and four females. January, February, and March.

Two of the male specimens have a round yellowish spot near the center of the elytra. It was not determined if this is of specific value, as no female with this marking is in the collection. The anterior tibiae are dorsally somewhat sulcate in these specimens.

## 14. PLAGIOPTERA BICORDATA Serville.

One female. January.

## 15. TURPILIA SUBINERMIS, new species.

Size, small. Differing from the described species of the genus in having the posterior femora unarmed below, or nearly so, and with the anterior and intermediate tibiae spined above with several spines.

Color, green or yellowish green. Pronotum with the lateral lobes scarcely higher than long, meeting the disk with a rounded angle. Elytra elongate, apically narrowly rounded, in the female but little shorter than the wings, in the male considerably shorter. Legs slender; anterior tibiae rounded above and armed on the outer margin with 3 spines; middle tibiae sulcate above and armed on the inner margin with several spines and on the outer carina with 1 or 2; anterior and intermediate femora armed below with 3 or 4 small spines; posterior femora usually unarmed below, sometimes with a few very small spinules. Cerci of the male about five times as long as the basal width and apically bent abruptly inward, the tip truncate; subgenital plate apically truncate with moderately long, stout, rigid styles. Ovipositor about as long as the pronotum, strongly upcurved at the base, finely serrate above and below in the outer three-fourths.

Length, pronotum, male, 4-4.25 mm.; female, 4.5 mm.; elytra, male and female, 22-25 mm.; posterior femora, male, 16-16.5 mm., female, 17-18 mm.; ovipositor, 5-5.5 mm.; width of the elytra at the middle, male and female, 6.5-7.25 mm.

*Type*.—Cat. No. 9632 U.S.N.M.

Two males and four females. December and February.

This species exhibits some characters at variance with those attributed to *Turpilia*, but I have hesitated to make a new genus for it. The spines of the anterior and intermediate tibiae are very fine and are often absent, probably broken off.

## 16. STEIRODON VALIDUM Stål.

One female. December.

This specimen is a little smaller than the measurements given for this species by Brunner, the size being as follows:

Length, pronotum, 14.5 mm.; elytra, 73 mm.; posterior femora, 34 mm.; ovipositor, 8 mm. Width of the elytra at the middle, 26 mm.

## Subfamily PSEUDOPHYLLINÆ.

## 17. DASYSCELUS NORMALIS Brunner.

Very similar to *D. argentina*<sup>a</sup> of Berg, but a little larger. The color and general structure seems very like Berg's species, but I can scarcely agree with Brethes in considering these synonymous.<sup>b</sup> They differ specifically in the following respects: The posterior femora of *normalis*, as represented by the specimens before me, are much longer and the anterior femora are armed beneath on the inner side with three distinct spines, while in *argentina* they are described as unarmed. The ovipositor is considerably broader than in *argentina* and the legs are very little mottled and the antennæ scarcely at all banded. The measurements of the specimens before me are as follows:

Length, pronotum, male 8 mm., female 9 mm.; elytra, male 9.5 mm., female 10-10.5 mm.; anterior femora, male 10 mm.; female 10.5-11 mm.; intermediate femora, male 7.5 mm., female 8-8.5 mm.; posterior femora, male 17 mm., female 20.5 mm.; posterior tibiæ, male 18 mm., female 20 mm.; ovipositor, 12 mm.; width, posterior femora, male 3.5 mm., female 4 mm.; ovipositor, 3.25 mm.

One male and two females. December and January.

## Subfamily GRYLLACRINÆ.

## 18. HYPERBÆNUS BOHLSII Giglio-Tos.

One male. February.

## Subfamily CONOCEPHALINÆ.

## 19. COPIOPHORA PRODUCTA Bolivar.

One female. February.

The pronotum is a little short and the ovipositor a little long for this species, measuring, respectively, 9 and 38 mm. in length.

## 20. CAULOPSIS OBERTHURI Bolivar.

One male. August.

The pronotum of this specimen shows no indication of anterior emargination.

## 21. CONOCEPHALUS DISSIMILIS Serville.

Three males, four females, two nymphs. December, January, February, and March.

<sup>a</sup> This species, which was described under the genus *Pleminia*, is in part the species questionably referred to *Pleminia miserabilis* by Giglio-Tos in Bull. Mus. Torino, IX, no. 184, 1894, p. 40, and later referred by the same author to the *Dusyscelus demigratus* of Brunner. But that species is typically African and will probably be found to differ from this South American form.

<sup>b</sup> Anal. Mus. Nac. Buenos Aires, (III) V, 1905, p. 67.

## 22. CONOCEPHALUS PUSTULATUS Redtenbacher.

One female. December.

## XIPHELIMUM, new genus.

*Male*.—Robust. Fastigium narrow, narrower than the basal segment of the antennæ, which it does not surpass, dorsally very narrowly sulcate, separated from the face below by a constriction and transverse sulcus; face smooth. Pronotum smooth, subtruncate before and behind, the disk posteriorly considerably elevated and moderately produced; lateral lobes rectangulate below, the posterior border nearly straight, humeral sinus slight, anterior border perpendicular in upper half, the lower half tapering backward, meeting the posterior margin at right angles; lateral carinæ barely indicated by broadly rounded angles; prosternum bispinose; meso- and metasternal lobes acute angulate but not spinose. Wings and elytra of equal length, surpassing the short abdomen, but scarcely passing beyond the middle of the long hind femora; elytra very broad, inclosing the abdomen and broadly rounded or subtruncate apically, the costal area very broad, transparent and occupied by very distinct parallel transverse veins; stridulating organ well developed. Legs slender, anterior and intermediate tibiæ with 6 subequal spines on each side below, the posterior tibiæ with an apical spine on each side above; anterior and intermediate femora unarmed, the posterior ones armed below on both margins; genicular lobes spinose. Cerci cylindrical, slightly incurved and armed on the inner side beyond the middle with a broad double-pointed tooth.

*Type*.—*Xiphelimum amplipenne*, new species.

This genus is allied to both *Xiphidium* and *Orchelimum*, the more heavy form giving it more the appearance of the latter. The very broad elytra with the transparent costal field with its array of distinct parallel transverse veins gives it a very characteristic appearance.

## 23. XIPHELIMUM AMPLIPENNIS, new species.

*Male* (female unknown).—General color greenish, the top of the head and of the pronotum anterior of the fairly distinct principal sulcus with a broad mesial band of solid black, rarely extending faintly back upon the posterior part of the disk. Elytra with the apex externally longitudinally folded, giving the tip a notched or truncate appearance when viewed from the side or end. Legs reddish, the apices of the posterior tibiæ and femora piceous and the posterior tarsi also black. The posterior legs are very long and the femora are armed on each side below with 5 or 6 stout spines.

Length, pronotum 4-4.5 mm; elytra, 10-11 mm; posterior femora, 14-16.5 mm.

*Type*.—Cat. No. 2630, U.S.N.M.

Five males. February and March.

24. XIPHIDIUM BRACHYPTERUS Redtenbacher.

Two females. January and February.

25. XIPHIDIUM LONGIPES Redtenbacher.

Two males, one female. February and March.

26. XIPHIDIUM MERIDIONALE Scudder.

Six males, twelve females. January, February, and August.

27. XIPHIDIUM SALTATOR Saussure.

Two males, four females. January and February.

This is probably but a form of *fasciatum*, having been referred to as such by Griffini. Most of these females have the ovipositor 12 or 13 mm. long, but one specimen has it barely 9 mm. This latter specimen, which agrees with ones named *saltator* by Dr. S. H. Scudder, has the ovipositor straight while in the others it is a little curved.

28. XIPHIDIUM STRICTOIDES, new species.

*Female* (male unknown).—Superficially resembling *X. strictum* Scudder and in many respects structurally allied to it.

Slender. Green or brownish. Fastigium of the vertex narrow, viewed from above narrower than the basal segment of the antennæ, constricted before the tip, from an anterior view considerably and gradually narrowing from above downward. In the allied species, *strictum*, the vertex is much broader, being as broad as the basal segment of the antennæ when viewed from above, and when viewed from in front narrows abruptly from above downward, appearing triangular. Pronotum with the lateral lobes rounded-angulate below, the posterior margin straight, without sinus. Dorsum of head and pronotum usually unicolorous, sometimes with the median line infuscated. Legs unicolorous, all the femora unarmed; anterior tibiæ with 6 small spines on each side below. Wings aborted; elytra about as long as the thorax, apically narrowly rounded, not, or barely, overlapping. Abdomen unicolorous. Ovipositor very long, much longer than the posterior femora, nearly straight.

Length, pronotum, 3.25-3.5 mm.; posterior femora, 15.5 mm.; elytra, 3-3.5 mm.; ovipositor, 24 mm.

*Type*.—Cat. No. 9631, U.S.N.M.

Four females, one immature. December, January, and February.



## Family GRYLLIDÆ.

29. *SCAPTERISCUS BORELLII* Giglio-Tos.

Four specimens. November and February.

30. *SCAPTERISCUS CAMERONI* Giglio-Tos.

Two specimens. March.

31. *GRYLLUS ARGENTINUS* Saussure.

One male and two females of the long winged form and one brachypterous male. November, December, and January. Also one nymph taken in August.

32. *GRYLLUS ASSIMILIS* Fabricius.

Four males, nine females, long winged; one male, three females, short winged. Also a number of immature specimens. December, January, and August.

33. *MIOGRYLLUS PUSILLUS* Burmeister.

One male, one female. January and February.

34. *NEMOBIUS FASCIATUS* DeGeer.

Two males. February.

35. *NEMOBIUS MELLEUS* Scudder.

Two females. February.

36. *CYRTOXIPHUS*, species.

One small nymph, probably belonging to this genus. January.

37. *DIATRYPA TUBERCULATA* Saussure.

One female. January.

This small elongate yellowish cricket is very probably correctly referred here. It has the following measurements:

Length, pronotum, 2.5 mm.; elytra, 10 mm.; posterior femora, 7.5 mm.; ovipositor, 6.5 mm.; width of pronotum, 2.75 mm.

The disk of the pronotum is longitudinally striped on each side with fuscous.

38. *ENEOPTERUS SURINAMENSIS* DeGeer.

Seven males, nine females. February, March, July, August, and October.

39. *COPHUS THORACICUS?* Saussure.

One female. October.

It is doubtful if this specimen belongs to this species, though it certainly belongs to the genus. The type locality, Cuba, is far from Paraguay, and there are also discordant characters in the structure of the insect. The color is dark brown mottled with black, the front and middle legs are distinctly ringed with black, and the hind femora are mottled with fuscous. The posterior tibiæ have four spines on each side.

Length, pronotum, 5 mm.; anterior femora, 10 mm.; posterior femora, 20.5 mm.; ovipositor, 20 mm.